



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,800	03/30/2004	Rick C. Stevens	5801EA253	6037
44341	7590	02/15/2005	EXAMINER	
JACOBSON & JOHNSON ONE WEST WATER STREET, SUITE 285 ST. PAUL, MN 55107			KALIVODA, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/812,800	Applicant(s) STEVENS, RICK C.	
	Examiner Christopher M. Kalivoda	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 11, 14 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION*****Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 3 contains reference sign 14', which is not mentioned in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The disclosure is objected to because of the following informalities: There are a few typographical errors in the specification. For example, on page 4, line 5, the word "coupled" should be "couple" and in line 18, the word "rotationally" should be "rotational". Appropriate correction is required.

### ***Claim Objections***

Claims 11, 14 and 20 are objected to because of the following informalities:

Regarding claim 11, line 3, there is a missing semicolon “;” after the last word fiber. Also, in line 5, the word “terminus” should be added after the word “cut”.

Regarding claim 14, line 1, there is a missing transition, such as “wherein”, after the number 13.

Regarding claim 20, line 2, there is missing text. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation “the rotatable member” in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: where the rotational joint is placed since this part of the text is missing.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681.

Regarding independent claim 1 as claimed, Takabashi teaches an optical coupler (Fig 3, ref sign 31) comprising a first optical fiber (Fig 3, ref sign 41b) and a further optical fiber (Fig 1, ref sign 41a) rotatably mounted with respect to the first optical fiber (col 5, lines 1-4) with an end of the first optical fiber (Fig 1, refs sign 41b-right end) positioned proximate an end of the further optical fiber (Fig 1, ref sign 41a-left end) to permit transfer of an optical signal between the first optical fiber and the further optical fiber (col 4, lines 44-48) while permitting rotation thereof (col 5, lines 1-4).

While the reference does not specifically show the first fiber end proximate the further fiber end, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above.

Regarding independent claim 11 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling comprising a first optical fiber having an angle cut terminus (Fig 3, ref sign 41a and ref sign 36), a rotational joint located on the first optical fiber (col 5, lines 1-4 and Fig 3, ref sign 31); a second optical fiber having an

Art Unit: 2883

angle cut terminus (Fig 3, ref sign 42a and ref sign 35) with the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber positionable in optically transmittable condition with each other to minimize back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and an alignment sleeve (col 4, lines 56-58 and Fig 3, ref sign 59) for holding the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber in rotational alignment with respect to each to each other.

The rotational joint allows the ferrule 41b to rotate about the ferrule 41 and results from the holder 51 keeping the ferrule 41b adjacent ferrule 41a.

While the reference does not specifically show first and second fibers having an angle cut terminus, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers) have angle cut terminus'.

Regarding independent claim 16 as claimed, Takabashi teaches a method of twist free optical coupling comprising: forming a rotational butt coupled joint in an optical lead having a terminus (Fig 3, ref sign 41a, left end); forming a coupling angle cut face on the terminus of the optical lead (Fig 3, ref sign 41a and 36); forming a mating coupling angle cut face on the terminus of another optical lead (Fig 3, ref sign 42a and 35); and rotationally aligning the coupling angle cut face of the optical lead with the mating coupling angle cut face to thereby transmit an optical signal therebetween (col 4, lines 44-48) while minimizing back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and twisting of the optical lead (col 5, lines 1-5 since the ferrule 41b can rotate).

Art Unit: 2883

While the reference does not specifically state or show a butt coupled joint in an optical lead or an angle cut face in an optical lead, fibers/optical leads are implied to be in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers/leads) have angle cut faces and are butted up against other ferrules/fibers.

Regarding claims 3, 5, 12, 18 and 19, there is an alignment sleeve mounted on the coupler (col 4, lines 56-58 and Fig 3, refs sign 59) with an alignment guide (Fig 3, ref sign 55 and 56 where the threads used as guides).

Regarding claim 4, there is a second optical coupler mounted in the alignment sleeve (Fig 3, refs sign 32).

Regarding claim 6, there is a flanged member (Fig 3, refs sign 51 and 45) holding the first optical fiber and a rotatable member comprising a further flanged member holding the further optical fiber (Fig 3, ref sign 59).

Regarding claim 7, a U-shaped member holds the flanged member and the further flanged member in rotational engagement with each other (Fig 3, ref sign 57).

Regarding claim 8 and 10, at least one of the optical fibers or the further optical fiber includes an angle cut face (Fig 3, ref sign 36). While the reference does not specifically show a fiber having an angle cut terminus, fibers are implied to be in the ferrule 41a to permit light transmission described above and the ferrule has an angle cut face.

Regarding claim 9, the end of the first optical fiber and the end of the further optical fiber form a butt connection (Fig 3, ref sign 41b-right end and 41a-left end). While the reference does not specifically state "form a butt connection", these types of connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Regarding claim 13, the first optical fiber includes a butt connectable end in the rotational joint of the first optical fiber (Fig 3, ref sign 41a-left end). While the reference does not specifically state "a butt connection", these types of connections are implied since fibers are implied to be in the ferrules 41a to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Claims 2, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193. Regarding claims 2 and 14, Takabashi teaches the limitations of claims 1, 11 and 16 as described above.

However, the reference is silent with respect to an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber/leads and the further optical fiber/lead located proximate the end of the first optical fiber and the end of the further optical fiber/lead or proximate the butt connectable end



Art Unit: 2883

in the rotational joint or in the butt coupled joint. In other words, adding an index-matched fluid between the end of ferrules 41a and 41b.

Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber and the further optical fiber located proximate the end of the first optical fiber and the end of the further optical fiber or proximate the butt connectable end in the rotational joint for the purpose of improving return losses (col 2, lines 17-19). In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193.

Regarding independent claim 15 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling (Fig 3) comprising a first optical lead having a butt connectable end (Fig 3, ref sign 41b, right-end), a first member holding the first optical lead (col 5, lines 1-4 and Fig 3, ref sign 51); a second optical lead having a butt connectable end (Fig 3, ref sign 41a); a second member holding the butt connectable end of the second optical lead (Fig 3, ref sign 49) in rotational relationship with respect

Art Unit: 2883

to the butt connectable end of the first optical lead (col 5, lines 1-4 and abstract, lines 6-8); the second optical lead having an angle cut end face (Fig 3, ref sign 36) to allow passage of an optical signal through the angle cut end face (col 4, lines 44-48);

While the reference does not specifically state "having a butt connectable end", these types of connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above. The figure shows the ferrules 41a and 41b (and thus fiber) butted up against each other.

However, the reference is silent with respect to a transparent substance extending between the butt connectable end of the first optical lead and the butt connectable end of the second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead to thereby inhibit loss of an optical signal therebetween while permitting rotation thereof.

Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include a transparent substance extending between the butt connectable end of the first optical lead and the butt connectable end of the second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead to thereby inhibit loss of an optical signal therebetween

Art Unit: 2883

while permitting rotation thereof for the purpose of improving return losses (col 2, lines 17-19).

In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 6,702,478 to Inagaki et al. and 4,989,946 to Williams et al. describe coupling fibers that are capable of rotation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (571) 272-2476. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Application/Control Number: 10/812,800

Page 11

Art Unit: 2883

you have questions on access to the Private PAIR system, contact the Electronic  
Business Center (EBC) at 866-217-9197 (toll-free).

  
cmk

